METHODS FOR DETERMINING THERAPEUTIC RESONANT FREQUENCIES

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority to applicant's co-pending application having U.S. Serial No. 60/181,460, filed February 10, 2000.

FIELD OF THE INVENTION

The present invention relates to methods for determining resonant frequencies having therapeutic uses in a variety of settings. In particular, the present invention provides methods for efficiently determining therapeutic resonant frequencies for complete genomes, partial genomic materials, and atoms and molecules, for use in various media having different refractivities.

BACKGROUND OF THE INVENTION

Resonant frequency therapy (RFT) is a non-invasive treatment that has been reported to offer significant relief to sufferers of a variety of ailments and medical conditions. The use of RFT for human and animal therapeutic purposes began in the early 1900's, and experienced accelerated development through the research of Royal Rife and his associates in the 1930's and afterward.

Using new microscope technology he developed, Rife observed that specific disease-causing microorganisms each had a definite and distinct wavelength. Rife discovered that plasma waves could be used to transmit radio and audio frequencies, which were tuned to the frequencies of specific microorganisms, and that each microorganism responded to its unique frequencies. For example, Rife found that staphylococcus, streptococcus, microorganisms associated with tuberculosis, typhoid, and leprosy, as well as cancer particles, and other disease-

1   causing agents succumbed when exposed to certain frequencies peculiar to each organism or

2   particle. See, Siedel, R.E., and M.E. Winter, The New Microscopes, Smithsonian Annual Report

3   1944, pp. 193-200.

4   Using the principles of Rife's discoveries, various researchers developed devices for

5   emitting energy frequencies designed to treat a range of diseases and conditions. For example,

6   Dr. Abraham Ginsberg used an apparatus which produced intermittent bursts of high energy in

7   the short wave spectrum. Ginsberg's modality was found to stimulate the reticuloendothelial

8   system without undesirably heating tissue. Using his device, Ginsberg reported successfully

9   treating patients with various clinical conditions, including chronic Staphylococcus infections,

10   acute inflammatory middle ear, chronic ulcerative colitis, bronchitis, rheumatoid arthritis, gout,

11   flu, and thrombophlebitis, among others. See, Cominole, B., Clinical Impressions and

12   Speculations on the Use of High-Frequency Pulsed Energy, The Dr. Abraham J. Ginsberg

13   Foundation for Medical Research Symposium, June 29, 1959.

14   Research utilizing resonant frequencies and therapeutic modalities implementing such

15   frequencies have proliferated over the past ten years. A recent example of the use of resonant

16   frequency therapy is the Christchurch Resonant Frequency Therapy Centre in Dunedin, New

17   Zealand. While the Centre emphasizes that resonant frequency therapy is not intended to replace

18   treatment regimens and medication prescribed by physicians, it does report successful treatment

19   of a range of clinical conditions, including arthritis, tinnitis, blood pressure, cataracts, headaches,

20   shingles, and psoriasis. Arthritis patients report particular success with pain reduction and

21   greater mobility. The Christchurch Press, Frequency Therapy Offers Relief, Independent

22   Newspapers Limited, Oct. 28, 1999.

1   Thus, the use of magnetic fields, and audio, radio, and light waves to inhibit microbial

2   growth and to treat diseases and affected tissue is well known in the art. Effective therapeutic

3   resonant frequencies have been identified through various means. Trial and error approaches

4   with resonant frequencies have been used to obtain therapeutic responses. Devices for applying

5   electromagnetic energy to living tissue are disclosed, for example, in U.S. Patent No. 3,876,373,

6   U.S. Patent No. 4,524,079, and U.S. Patent No. 5,091,152. Effective resonant frequencies have

7   also been identified through the use of frequency scanning with electronic devices capable of

8   detecting frequency response from a bacterial, viral, and/or tissue sample. Such devices for

9   detecting frequency response are disclosed, for example, in U.S. Patent No. 5,552,274, U.S.

10   Patent No. 5,981,182, and U.S. Patent No. 6,004,257. Thus, there exists a need for more

11   efficient and accurate methods than trial and error to determine therapeutic resonant frequencies

12   for specific target materials, such as microorganisms.

13   Therapeutic resonant frequencies may be used to inhibit, or debilitate, and/or stimulate a

14   biophysical event. The efficacy of such frequencies, whether for stimulation or for debilitation,

15   depends to some extent on the type of frequency delivery system used, including variables such

16   as power levels, waveform, harmonic content of the wave, and other factors. Once therapeutic

17   resonant frequencies are determined, a practitioner must choose which devices and delivery

18   systems are most effectively used in conjunction with those frequencies. To increase therapy

19   efficacy, an easier, quicker, and more accurate way of determining therapeutic resonant

20   frequencies for use with particular devices is needed.

21   Despite both historical and increasing recent interest in use of resonant frequency

22   therapy, mechanism(s) of action underlying the use of known therapeutic resonant frequencies is

23   not fully understood. For instance, while it is recognized that some type of resonance

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1   phenomenon debilitates or destroys microorganisms, the biophysical and/or biochemical

2   mechanism(s) associated with use of specific resonant frequencies and that lead to microbial

3   inhibition are not completely known.

4   Before now, there has never existed a methodology that links effective therapeutic

5   resonant frequencies to a biophysical or biochemical event, process, or structure. The electronic

6   scanning devices and methods currently commercially available provide no explanation or

7   insight regarding which physical structure or process is influenced by frequencies used.

8   In PCT patent application WO 8403165 A1, French physicist Joel Sternheimer discloses

9   that by converting atomic or molecular mass to frequency, quantum vibrations that occur at the

10   molecular level as a protein is being assembled from its constituent amino acids can be translated

11   into musical notes. High frequencies associated with vibrations of atoms and molecules in the

12   cosmic region of the electromagnetic spectrum can be transposed a certain number of octaves

13   downwardly to the frequencies in the human audible range. In making such a translation from

14   quantum amounts of electromagnetic energy to human-audible frequencies, Sternheimer does not

15   account for velocity, or speed of light, through a surrounding medium, such as living tissue.

16   Thus, a musical frequency derived by Sternheimer's method may not be the most closely related,

17   or therapeutic, frequency for a particular biophysical event.

18   Therefore, there is a need for methods to more readily and efficiently determine

19   therapeutic resonant frequencies for specific genomic, atomic, and molecular materials that

20   provide for precise adjustments for the refractive index of a surrounding medium, and that can be

21   easily and accurately translated to ranges useful in currently available devices. It is to these

22   perceived needs that the present invention is directed.

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SUMMARY OF INVENTION

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3   The present invention provides methods for determining resonant frequencies having

4   therapeutic uses in a variety of settings. In particular, the present invention provides methods for

5   efficiently and accurately determining therapeutic resonant frequencies for complete genomes,

6   partial genomic materials, and atoms and molecules, for use in various media having different

7   refractivities.

8   Methods of the present invention utilize biophysical and biochemical properties of

9   genomic materials and atoms and molecules to determine therapeutic resonant frequencies. For

10   example, the length of any object can be considered as having a resonant frequency by virtue of

11   correlation with a wavelength that manifests itself into a surrounding medium. On that basis, the

12   length of biomolecular chains of DNA and RNA can be measured and thus can provide

13   wavelength information unique to a specific strand of genomic material. Specifically, it is

14   known that a strand of DNA has conductive characteristics. The dipole features of a DNA strand

15   give it directionality as to how the charged molecular components are aligned in the chain. If a

16   DNA double helix is unraveled, each length of unraveled chain has a positive charge on one end,

17   and a negative charge on the other end, due to the alignment of its nucleotides. As such, a DNA

18   strand exhibits characteristics of a length of linear antenna and can provide wavelength

19   information for use in determining resonant frequencies useful in a therapeutic manner.

20   When two strands of DNA are bonded with each other in the usual helical form, the

21   strands are aligned parallel to each other but have opposite polarities on adjacent ends of each

22   strand. The double-strand configuration can be compared to two waveforms, slightly offset in

23   phase, traveling in opposite directions. Moreover, when the two strands are bonded in normal

24   form, negatively-charged molecular ions (the PO_4 groups) run the entire length of the molecule

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1   on the outer surface of the chain in a helical fashion, causing the molecule to contain a relatively

2   large negative charge on its surface. Thus the chain is highly electro-sensitive to the influences

3   of resonant oscillating electromagnetic fields, or frequencies.

4   Resonance is defined as the increase in amplitude of the natural oscillation, or frequency,

5   of an system when exposed to a periodic force whose frequency is equal or very close to the

6   natural frequency of the system. The natural oscillation of a system or part of a system is

7   defined as "natural resonant frequency." As an example, when a system, such as a strand of

8   DNA, is exposed to a frequency that is the same or very close to the natural resonant frequency

9   of the particular DNA, the frequency of the DNA strand will increase in amplitude, or resonate.

10   In radio science, the length of an antenna will largely determine how effectively the

11   antenna responds to the wavelength energy of an incoming transmission. Methods for

12   determining therapeutic resonant frequencies of the present invention utilize the principle that the

13   length of a DNA or RNA helical chain can be electromagnetically resonated in similar fashion.

14   The resonance of atoms and molecules can also be derived from the wavelength initially

15   associated with the deBroglie matter-wave, as described below. The resulting wavelength can

16   then be electromagnetically resonated using appropriate criteria consistent with the surrounding

17   medium.

18   Methods of the present invention allow precise correlations between therapeutic resonant

19   frequencies and the wavelength of the genomic, molecular, or atomic material under

20   consideration. If a resonant frequency delivered in a therapeutic modality is generated in air (or

21   a vacuum) while the target material resides in a different medium, a refractive adjustment is

22   made to insure that the wavelength traveling from the air or vacuum medium transforms to the

23   wavelength of the target material in the surrounding medium. By accounting for an appropriate

1 electromagnetic refractive index for the surrounding medium, such as water or tissue, methods of

2 the present invention provide the advantage of determining a resonant frequency that would be

3 more closely related to the natural resonant frequency, and thus more appropriate, or therapeutic,

4 for the genomic, atomic, or molecular system in that specific medium.

5 The natural electromagnetic resonant frequencies for DNA genomes fall for the most part

6 in the infrared region of the electromagnetic (EM) spectrum. The natural resonant frequencies

7 for genes and smaller portions of DNA appear in the near infrared, visible, and near ultraviolet

8 regions of the spectrum, while the natural resonant frequencies for atoms and molecules fall near

9 the cosmic region of the EM spectrum. For many currently available frequency-emitting, or

10 wavelength generator, devices, EM fields with such natural resonant frequencies as those for

11 genomic, molecular, and atomic material are not achievable due to the technical limitations of

12 the device. Indeed, particular devices often are capable of generating frequencies in only narrow

13 EM field ranges. To overcome such limitations, methods of the present invention adjust resonant

14 frequencies upward or downward. To determine an appropriate lower range frequency in

15 accordance with the present invention, the therapeutic resonant frequency is divided by the

16 number 2, as many times as necessary, until a frequency in the frequency-generating range of a

17 device is achieved. The power of 2 by which a therapeutic resonant frequency is factored will

18 depend on the range of the EM spectrum within which a frequency delivery device operates.

19 In music, a similar adjustment would be termed moving to a higher or lower octave.

20 Moving to a higher octave would in effect cut the wavelength in half, while moving to a lower

21 octave would double the wavelength. In accordance with methods of the present invention,

22 therapeutic resonant frequencies of genomic, molecular, and atomic material are translated, or

23 "shifted by octaves," to a lower octave in the EM spectrum, by dividing the therapeutic resonant

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1   frequency by some power of the number 2. The lower octave of a therapeutic resonant

2   frequency, while having a much longer wavelength, will resonate with the first therapeutic

3   resonant frequency, just as musical octaves resonate with and amplify each other, but only when

4   the octave translation is exact. Thus, to be therapeutic, a resonant frequency must have a precise

5   correlation with the natural, or original, resonant frequencies of the target material.

6   The present invention comprises methods for determining therapeutic resonant

7   frequencies of electromagnetic radiation for influencing a target genomic material, where the

8   genomic material is surrounded by a medium. Embodiments of these methods include the

9   following steps: (1) determining a velocity of electromagnetic radiation through the medium

10 surrounding the genomic material; (2) determining a wavelength of the genomic material; (3)

11 determining a first resonant frequency of the genomic material in one electromagnetic frequency

12 range by dividing the velocity of the electromagnetic radiation through the surrounding medium

13 by the wavelength of the genomic material; (4) shifting the first resonant frequency by a factor of

14 a power of two to at least one of a group of resonant frequencies in at least one other

15 electromagnetic frequency range; (5) programming a frequency-emitting device to emit the at

16 least one of a group of resonant frequencies in the at least one other electromagnetic frequency

17 range; and (6) selectively influencing the target genomic material with the at least one of a group

18 of resonant frequencies in the at least one other electromagnetic frequency range when the

19 frequency-emitting device emits the at least one of a group of resonant frequencies in the at least

20 one other electromagnetic frequency range into the medium surrounding the target genomic

21 material.

22   Methods of the present invention further comprise determining the wavelength of the

23 genomic material by determining the number of base pairs in the genomic material, measuring

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1   the spacing between adjacent base pairs, and multiplying the number of base pairs in the

2   genomic material by the spacing between adjacent base pairs. In a preferred embodiment, the

3   base pairs are spaced apart by an average spacing, which is a known value, and determining the

4   wavelength of the genomic material comprises determining the number of base pairs in the

5   genomic material and multiplying the number of base pairs in the genomic material by the

6   known value for the average spacing between base pairs.

7   In a typical environment, genomic material exists in living, or in-vivo, tissue. In methods

8   of the present invention, the velocity of electromagnetic radiation through in-vivo tissue is

9   determined by accounting for the unique electrical permittivity of in-vivo tissue in relation to

10   velocity, such that velocity $= 1 / \sqrt{(\varepsilon_0 \, \mu_0)}$, where ε_0 is electrical permittivity, and μ_0 is magnetic

11   permeability. With this measurement of in-vivo velocity, a refractive index of electromagnetic

12   radiation through in-vivo tissue is determined by dividing the velocity of electromagnetic

13   radiation, or the speed of light, in a vacuum by the speed of light in in-vivo tissue. Then by

14   dividing a therapeutic resonant frequency determined for the genomic material in an air medium

15   by the refractive index for in-vivo tissue, a therapeutic resonant frequency for the genomic

16   material surrounded by in-vivo tissue is determined.

17   In other embodiments, methods of the present invention include multiplying therapeutic

18   resonant frequencies in a range adaptable for use in frequency-emitting devices by a positive

19   integer to determine harmonic frequencies and dividing therapeutic resonant frequencies in a

20   range adaptable for use in frequency-emitting devices by a positive integer to determine

21   subharmonic frequencies. By programming a frequency-emitting device to emit the harmonic

22   and subharmonic frequencies, target genomic material is selectively influenced with the

23   therapeutic resonant frequencies and the harmonic and subharmonic frequencies when the

1   frequency-emitting device emits these resonant frequencies into the medium surrounding the

2   target genomic material.

3   In other embodiments, the present invention comprises methods for determining

4   therapeutic resonant frequencies of electromagnetic radiation for influencing atomic and

5   molecular particles. In such embodiments, a wavelength of a particle is determined by dividing

6   Plank's constant by the product of the mass of the particle and the speed of light. Using this

7   measurement, methods of the present invention allow determination of therapeutic resonant

8   frequencies as described above.

9   Features of methods for determining therapeutic resonant frequencies of the present

10   invention may be accomplished singularly, or in combination, in one or more of the

11   embodiments of the present invention. As will be appreciated by those of ordinary skill in the

12   art, the present invention has wide utility in a number of applications as illustrated by the variety

13   of features and advantages discussed below.

14   Methods of the present invention provides numerous advantages over prior efforts to

15   identify therapeutic resonant frequencies. For example, the present invention advantageously

16   provides methods for determining resonant frequencies effective for stimulation and/or

17   debilitation of specific types of DNA and/or RNA, genes and gene sections, atoms and

18   molecules, and/or living tissue.

19   Another advantage of the methods of the present invention is that they provide means for

20   determining therapeutic resonant frequencies that are readily and efficiently accomplished using

21   widely available data.

22   Another advantage is that the present invention provides methods for readily and

23   efficiently predicting resonant frequencies that can be used therapeutically in a variety of settings

1 surrounding microbiological and biochemical events, including treatment of various human and

2 animal diseases and conditions, agriculture, water systems, food processing systems, and others.

3   Another advantage is that the present invention provides methods for readily and

4 efficiently determining therapeutic resonant frequencies that take into account an appropriate

5 electromagnetic refractive index for a surrounding medium. By accounting for an appropriate

6 electromagnetic refractive index for a surrounding medium, the present invention has the

7 advantage of determining a more precise, or more therapeutic, resonant frequency for the

8 genomic, atomic, or molecular system in a particular medium.

9   Still another advantage is that the present invention provides easier and more efficient

10 methods for determining resonant frequencies that significantly enhance the therapeutic and cost-

11 effectiveness of currently existing electromagnetic, magnetic, plasma, audio, or other frequency-

12 emitting devices.

13   Another advantage over prior approaches to identifying resonant frequencies is that the

14 present invention provides the advantage of methods that utilize a simple biophysical or

15 biochemical model for explaining and understanding why specific resonant frequencies are

16 effective.

17   As will be realized by those of skill in the art, many different embodiments of methods

18 for determining therapeutic resonant frequencies according to the present invention are possible.

19 Additional uses, objects, advantages, and novel features of the invention are set forth in the

20 detailed description that follows and will become more apparent to those skilled in the art upon

21 examination of the following or by practice of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention comprises methods for determining resonant frequencies having therapeutic uses in a variety of settings. In particular, the present invention includes methods for efficiently and accurately determining therapeutic resonant frequencies for specific complete genomes, partial genomic materials, and atoms and molecules. Methods of the present invention also comprise means for determining a more precise, and more therapeutic, resonant frequency for the genomic, atomic, or molecular system in a particular medium by accounting for an appropriate electromagnetic refractive index for the surrounding medium.

Complete Genome

As described above, an object has a natural resonant frequency by the correlation of the length of the object with a wavelength that manifests into its surrounding medium. For example, the length of a DNA or RNA chain provides a wavelength that can be used to determine a resonant frequency. In embodiments of the present invention, the spacing of nucleotide base pairs in a DNA double helix is one variable of length used to determine frequency. The entire length of a genome or other length of DNA is determined by multiplying the of number of base pairs in the genome or other length of DNA times the spacing length between base pairs.

It is known that base pair spacing in strands of DNA is not always consistent. Localized areas contain "squeezing" or "spreading" of base pairs in various ways. In embodiments of the methods of the present invention, the classic Watson-Crick model of base pair spacing is used. The Watson-Crick model of base pair spacing is an average spacing over the entire length of the DNA molecule. Use of an average base pair spacing allows for accuracy sufficient to determine therapeutic resonant frequencies in accordance with the methods of the present invention.

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1   The B-helix is the most common in-vivo DNA form in bacterial and eukaryotic life

2   forms, and is used herein as illustration in the methods of the present invention. In the B-helix,

3   one complete turn of the helix spans a distance of 35.4 angstroms on its axis; and there are 10.4

4   base pairs in each helical turn. Therefore, the spacing of individual base pairs on the axis would

5   be 35.4 angstroms per turn divided by 10.4 base pairs per turn, which equals 3.403846 angstroms

6   per base pair. In scientific notation using SI units, the base pair spacing length is expressed as

7   3.403846 e-10 meters. This use of meters allows conversion of total length (treated as

8   wavelength) into a frequency.

9   By way of illustration using a pathogenic microorganism, the DNA genome of *Borrelia*

10   *burgdorferi* strain B31 contains 910,724 base pairs. To determine wavelength, 910,724 base

11   pairs times the base pair spacing of 3.403846 e-10 meters = 3.09996 e-4 meters total length of

12   the genome. As described above, the length of an object can represent the object's wavelength;

13   in this case, the length of the *Borrelia* genome represents its wavelength.

14   To convert this wavelength to frequency, the following common physics relationship is

15   used:

16   velocity / wavelength = frequency.   (1)

17   If the DNA under consideration was in a medium of air, velocity would be the speed of

18   electromagnetic radiation, or light, in air. For purposes of comparison, if *Borrelia burgdorferi*

19   was in an air medium, according to methods of the present invention, the velocity of

20   electromagnetic radiation through air (299,792,458 m/s) would be used in determining

21   therapeutic resonant frequencies. Dividing this velocity by the *Borrelia* genome wavelength:

22   (299,792,458 m/s / 3.09996 e-4 meters) = 9.6708492 e+11 Hz, the therapeutic resonant

23   frequency for *Borrelia* in an air medium.

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1   However, genomic material, including that of *Borrelia burgdorferi*, generally exists in a

2   medium of living tissue. The velocity of electromagnetic radiation through a general in-vivo

3   tissue medium is equal to the inverse of the square root of the product of the electrical

4   permittivity and the magnetic permeability of the medium. The formula for velocity of

5   electromagnetic radiation through a typical in-vivo tissue medium is given as:

6   velocity $= 1 / \sqrt{(\varepsilon_0 \mu_0)}$,   (2)

7   where ε_0 is electrical permittivity, and μ_0 is magnetic permeability.

8   The magnetic permeability (μ) through in-vivo tissue is known to be the same as that in

9   air: 1.2566370614 e-6 henrys / meter. However, electrical permittivity in live body tissue is not

10   the same as for air. A representative value for electrical permittivity through in-vivo tissue is 71

11   e-12 farads / meter. Applying these figures to formula (2) above, the result is: velocity =

12   $1/\sqrt{[(71\ e\text{-}12\ F/m) \times (1.2566370614\ e^{-6}\ H/m)]}$ = 105,868,288.9 meters per second, a

13   representative velocity of electromagnetic radiation through in-vivo tissue.

14   Thus, in this method of the present invention, to obtain an in-vivo therapeutic resonant

15   frequency of the *Borrelia burgdorferi* DNA genome having a wavelength of 3.09996 e-4 meters,

16   formula (1) above (velocity / wavelength = frequency) is used: 105,868,288.9 meters per

17   second / 3.09996 e-4 meters = 3.41515016 e+11 Hz.

18   Using the results of the above steps, a general refractive index of electromagnetic

19   radiation through in-vivo tissue can be determined. A refractive index (*n*) is given by the ratio of

20   the speed of light in a vacuum to the speed of light in the medium under consideration. This

21   ratio is stated as:

22   *n* = speed of light in a vacuum / speed of light in a medium.   (3)

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1   According to the steps given above, a refractive index of electromagnetic radiation through in-

2   vivo tissue would be: (299,792,458 m/s) / (105,868,288.9 m/s) = 2.831749.

3   Then, by dividing a therapeutic resonant frequency determined for a particular genomic

4   material in an air medium by the refractive index for in-vivo tissue, a therapeutic resonant

5   frequency for the genomic material in in-vivo tissue is quickly determined. Following the

6   example above, dividing the resonant frequency of *Borrelia* in air (9.6708492 e+11 Hz) by the

7   refractive index of electromagnetic radiation through in-vivo tissue (2.831749) gives the in-vivo

8   resonant frequency for the *Borrelia* genome (3.41515016 e+11 Hz).

9   The steps described above for the methods of the present invention can be adjusted to

10   correlate with any medium surrounding a genome under consideration, as long as an accurate

11   electromagnetic velocity through the medium is known or can be determined.

12   In another embodiment of the present invention, therapeutic resonant frequencies for

13   influencing specific genomic material for in-vivo tissue are translated from resonant frequencies

14   for the genomic material in a medium of air by multiplying or dividing the resonant frequencies

15   in air by the square root of two. The square root of two is a close approximation of half (a factor

16   of two) of the refractive index for electromagnetic radiation for in-vivo tissue. Using this

17   method, the same therapeutic resonant frequencies for a particular genomic material in living

18   tissue are determined as when the refractive index of 2.831749 is used as described above.

19   The 3.41515016 e+11 Hz in-vivo therapeutic resonant frequency determined above for

20   the *Borrelia burgdorferi* genome appears in the infrared range of the electromagnetic spectrum.

21   In embodiments of the present invention, methods allow access to corresponding resonant

22   frequencies in the lower, human audio range. To determine an accurate resonant frequency in

23   the human audio range corresponding to a first therapeutic resonant frequency, the first

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1 therapeutic resonant frequency is divided by the number 2, as many times as necessary, to reach

2 a frequency in the audio range. In musical terms, as described above, frequencies that are related

3 by a factor 2, or a power thereof, are known as octaves. In the example of the in-vivo *Borrelia*

4 *burgdorferi* genome, a multi-octave shift to audio range can be reached by dividing the first

5 therapeutic resonant frequency by 2^{29}, which gives a corresponding second therapeutic resonant

6 frequency of 636.12 Hz, which is in the audio range. This process of dividing (or multiplying)

7 any resonant frequency transposes it into a different octave by doubling (or halving) its

8 wavelength in an exact and precise manner, allowing a resonant correlation with the wavelength

9 under consideration in a specific medium. Thus, in the present invention, an octave-translated

10 therapeutic resonant frequency will precisely correlate with the first therapeutic resonant

11 frequency. Each of these frequencies will resonate with and amplify the other to provide

12 enhanced therapeutic effect.

13   In the example above, a therapeutic resonant frequency of the *Borrelia* genome in an air

14 medium is 9.6708492 e+11 Hz. To determine corresponding therapeutic resonant frequencies in

15 a different electromagnetic range, for example the human audible range, dividing by appropriate

16 powers of 2 as described in the methods of the present invention, the resulting therapeutic

17 resonant frequencies for *Borrelia* in air would be: 450.3 Hz, 900.7 Hz, 1801.3 Hz, 3602.7 Hz,

18 etc.

19   Also as described above, an in-vivo therapeutic resonant frequency of the *Borrelia*

20 genome is 3.41515016 e+11 Hz. Corresponding therapeutic resonant frequencies in a different

21 electromagnetic range, determined by dividing by appropriate powers of 2, results in *Borrelia* in-

22 vivo therapeutic resonant frequencies in the human audible range of: 636.12 Hz, 1272.24 Hz,

23 2544.5 Hz, 5088.9 Hz, etc. As would be expected using methods of the present invention, the in-

1   vivo therapeutic resonant frequencies in the human audible range for *Borrelia* are also readily

2   determined by multiplying the therapeutic resonant frequencies in the human audible range for

3   *Borrelia* in air by the in-vivo index of refraction.

4   As another illustration, if *Borrelia* were in still a different medium, such as water at 40

5   degrees centigrade, according to methods of the present invention, the velocity of EM radiation

6   through water at that temperature (225,319,768 m/s) would be used in determining therapeutic

7   resonant frequencies. Dividing this velocity by the genome wavelength: (225,319,768 m/s) /

8   (3.09996 e-4 meters) = 7.2684734 e+11 Hz, the therapeutic resonant frequency of *Borrelia*

9   *burgdorferi* DNA in water at 40 degrees centigrade.

10   To determine corresponding therapeutic resonant frequencies in a different

11   electromagnetic frequency range, again in this instance the human audio range, the resulting

12   resonant frequency above is then divided by appropriate powers of 2. This gives therapeutic

13   resonant frequencies in the human audible range for *Borrelia* in a water medium of: 676.9 Hz,

14   1353.9 Hz, 2707.7 Hz, 5415.4 Hz, etc.

15   In an alternative embodiment of the present invention, methods for determining

16   therapeutic resonant frequencies for a DNA chain under consideration use the numerical constant

17   4,526,016,44, as follows: 4,526,016,44 / number of base pairs in a chain = frequency. In this

18   embodiment, the speed of light in air or a vacuum (299,792,458 m/s) and the Watson-Crick

19   average base pair spacing value (3.403846 e-10 m) are multiplied together to provide a

20   numerical constant . As such, this method provides an efficient means for determining frequency

21   by ascertaining the number of base pairs in a particular DNA chain and multiplying by this

22   constant. For example, if there are 250 base pairs, or nucleotides, in a DNA chain, 4,526,016,44

23   / 250 = 18,104.07 hertz. For 5,000 base pair nucleotides in a DNA chain, 4,526,016,44 / 5,000 =

1   905.20 hertz. For 22,000 base pair nucleotides in a DNA chain, 4,526,016,44 / 22,000 = 205.73

2   hertz.

3   As described above, in methods of the present invention, corresponding therapeutic

4   resonant frequencies are determined for a different electromagnetic range, for example the

5   human audible range, dividing by appropriate powers of 2. Using the example of a 250-base pair

6   DNA chain above, 18,104.07 Hz / 2 = 9,052.035 Hz. Repeating division of the resulting

7   frequency by a factor of 2, such that 9,052.035 Hz / 2 = 4526.017 Hz / 2 = 2263.008 Hz / 2 =

8   1131.504 Hz / 2 = 565.752 Hz, a frequency in the range capable of generation by typical

9   frequency-emitting devices is quickly determined. To further shorten the process, dividing

10   18,104.07 hz by 32, or 2^5, yields a frequency of 565.752 Hz. Multiplying or dividing by an

11   appropriate factor of 2 (2, 4, 8, 16, 32, 64, 128, 526, etc.) will accurately convert therapeutic

12   resonant frequencies to a desired range for use in currently available devices. Shifting, or

13   translating, frequencies by factors of 2 shows that a sympathetic vibration is occurring at a

14   "mathematically resonant frequency," or a "mathematically resonant wavelength."

15   As described above, many currently available frequency-emitting devices are not capable

16   of producing therapeutic resonant frequencies in the infrared range, as that determined for the

17   *Borrelia burgdorferi* genome. To overcome such limitations, methods of the present invention

18   adjust resonant frequencies upward or downward by dividing (or multiplying) by a power of 2,

19   (for the *Borrelia burgdorferi* genome, by 2^{29}) until a frequency in the frequency-generating range

20   of a device is achieved.

21   Certain therapeutic devices emit not only a basic frequency (also referred to as the

22   "fundamental" frequency), but also many harmonics of that frequency. A "harmonic" is defined

23   as a positive integer multiple of the fundamental frequency. On this basis, in methods of the

18

1	present invention, additional frequencies can be determined and programmed into a frequency-

2	emitting device such that a harmonic of frequencies corresponding to a first therapeutic resonant

3	frequency of a target material would be emitted along with the fundamental frequency. Similar

4	additional frequencies can be determined by dividing the therapeutic resonant frequency by a

5	positive integer, resulting in a "subharmonic" frequency. Subharmonic frequencies

6	corresponding to a first therapeutic resonant frequency of a target material could also be

7	programmed into a frequency-emitting device and be emitted along with the fundamental and

8	harmonic frequencies. In this manner, a range of resonant frequencies corresponding to the first

9	therapeutic resonant frequency, each frequency of which is therapeutic, can be emitted

10	simultaneously. As a result, effectiveness of a particular device can be enhanced.

11	As an example, one in-vivo *Borrelia burgdorferi* therapeutic resonant frequency in an

12	audio-range octave is 636.12 Hz. When this therapeutic resonant frequency is divided by the

13	positive integer 2, the resulting subharmonic frequency is 318.06 Hz. When this subharmonic

14	frequency is programmed into a harmonic-rich output device and emitted, the audio-range

15	therapeutic resonant frequency 636.12 Hz is emitted simultaneously, increasing the likelihood

16	that a therapeutic resonant frequency will impinge a target *Borrelia burgdorferi* genome. In like

17	manner, dividing the audio-range therapeutic resonant frequency 636.12 Hz by the positive

18	integer 3, the resulting subharmonic frequency is 212.04 Hz. A harmonic-rich output device

19	programmed with this subharmonic frequency would also emit the 212.04 Hz therapeutic

20	resonant frequency along with the other resonant therapeutic frequencies, further increasing the

21	likely efficacy of the treatment.

22	The in-vivo therapeutic resonant frequency determined in the audio range for the *Borrelia*

23	*burgdorferi* genome (636.12 Hz) is very close to a frequency (640 Hz) commonly used for lyme

19

1   disease, which is caused by *Borrelia burgdorferi*. The accuracy of the methods of the present

2   invention may be confirmed by comparing the resultant therapeutic resonant frequencies with

3   many known and publicly available therapeutic frequencies.

4   In another example, the Rubella measles RNA virus contains 9755 base pairs in its entire

5   genome. (9755 base pairs) x (the base pair spacing of 3.403846 e-10 meters) = 3.32045 e-6

6   meters total length. This length is used as the wavelength for the Rubella viral genome. To

7   obtain the in-vivo therapeutic resonant frequency of this wavelength, formula (1) above is again

8   used: (105,868,288.9 meters per second) / (3.32045 e-6 meters) = 3.188371724 e+13 Hz.

9   A translation of this near-infrared frequency to human audio range by dividing by 2^{36}, gives a

10   frequency of 463.97 Hz. A known therapeutic frequency for the condition of Rubella measles is

11   459 Hz, another close match by the therapeutic resonant frequency determined by the methods of

12   the present invention.

13   A number of favorable responses have been reported by individuals using previously

14   unknown therapeutic resonant frequencies determined by methods of the present invention. For

15   example, one person who often experiences severe outbreaks of herpes simplex virus used the

16   genome-related therapeutic resonant frequencies derived by the methods of the present invention

17   for several strains of herpes viruses. This individual reported a much faster healing process than

18   what is usually experienced. Another example involves a person suffering from cancerous

19   cervical warts. After use of previously unknown therapeutic resonant frequencies relating to the

20   genome of a strain of papilloma virus, derived by the methods of the present invention, this

21   person reported disappearance of the warts. Still another example is a person infected with the

22   chickenpox virus, who was exposed to a previously unavailable therapeutic resonant frequency

20

1   associated with the varicella virus genome, and reported rapid disappearance of blisters and

2   symptoms associated with this disease.

3   In addition, in-vitro laboratory testing demonstrated that exposure of a strain of

4   *Escherichia coli* to a genome-related therapeutic resonant frequency produced a statistically

5   significant reduction in the number of colonies in cultures.

6
7   **Genes and Gene Sections**
8
9   Methods of the present invention for determining therapeutic resonant frequencies as

10   described above can also be applied to sections of DNA and/or RNA, as in genes, for example.

11   Using genetic coding information, methods of the present invention for determining therapeutic

12   resonant frequencies may also be utilized with other sub-components of genomic material, such

13   as enzymes, immune factors, oncogenes, oncogenic growth factors, and other proteins.

14   In embodiments of the present invention, therapeutic resonant frequencies are determined

15   using basic information about a protein, for example, how many amino acids are in the protein

16   chain. Because an amino acid is always coded by three base pairs in the messenger RNA, the

17   number of base pairs for use in determining resonant frequencies can be ascertained by

18   multiplying the number of amino acids in a protein chain by 3. For example, if there are 100

19   amino acids in a protein chain, there would be 300 base pairs in the final messenger RNA related

20   to that protein. Thus, according to methods of the present invention, to determine a therapeutic

21   resonant frequency: 4,526,016,44 / 300 base pairs = 15,086.72 Hz. Using a factor of 2^5 to

22   determine a corresponding therapeutic resonant frequency in a lower octave within the acoustic

23   range as described in the methods of the present invention above, the resulting therapeutic

24   resonant frequency would be: 15,086.72 Hz / 32 = 471.46 Hz, which is a frequency that

25   currently available frequency-emitting devices are capable of generating.

21

1   As an example, the int-1 mammary oncogene contains 4522 base pairs of DNA. A

2 therapeutic resonant frequency for this oncogene determined by the methods of the present

3 invention above is 2001.77 Hz. This therapeutic resonant frequency is very close to 2008 Hz, a

4 commonly used cancer-related frequency. Furthermore, the messenger RNA associated with the

5 final form of the transforming protein of the int-1 mammary oncogene contains 1112 base pairs.

6 A therapeutic resonant frequency for this transforming protein determined by the methods of the

7 present invention above is 2035.08 Hz, which is also in a range of cancer-related frequencies

8 currently in use.

9   As another example, the messenger RNA for the cancer-associated enzyme human

10 tyrosine kinase contains 3151 base pairs. Using 3151 base pairs as the wavelength, a therapeutic

11 resonant frequency for this enzyme, determined by the methods of the present invention above, is

12 2872.7 Hz. This frequency is very close to the cancer-related frequency 2876 Hz, which, along

13 with "resonant octaves" thereof, have been used throughout most of the twentieth century in

14 association with certain cancer therapy modalities.

15   Another example is a precursor gene for *Borrelia burgdorferi* outer surface protein A

16 (ospA) contains, which contains 822 base pairs. Using 822 base pairs as the wavelength, a

17 therapeutic resonant frequency for this protein determined by the methods of the present

18 invention above, after being factored by powers of 2 to the audible range, is 344.13 Hz. A

19 previously known frequency currently used for therapy related to lyme disease is 344 Hz, nearly

20 an exact match.

21   As can be seen, therapeutic resonant frequencies for genes, gene sections, constituent

22 components of genomic material, enzymes, proteins, and the like determined more readily and

1   efficiently by methods of the present invention than, for example, by trial and error, reliably

2   match frequencies found by other methods.

3   Favorable responses have been reported to the use of previously unavailable therapeutic

4   resonant frequencies, determined by methods of the present invention, relating to genes,

5   components of genes, and/or messenger RNA coding associated with certain proteins. For

6   example, an individual diagnosed with lung cancer used therapeutic resonant frequencies related

7   to certain growth factors and the K-ras oncogene, which is associated with his type of tumor. It

8   is reported that this individual experienced eradication of lung tumor material. Another example

9   is a student experiencing symptoms of both lyme disease and ehrlichiosis, who was unable to

10 attend school for a year and half due to the severity of symptoms. The student used previously

11 unavailable therapeutic resonant frequencies, determined by methods of the present invention,

12 for certain membrane and antigenic proteins associated with the organism *Ehrlichia chaffeensis*.

13 Within two weeks of beginning therapy with those therapeutic resonant frequencies, this student

14 was well enough to return to school.

15

16 **Atoms and Molecules**

17

18   Methods of the present invention for determining therapeutic resonant frequencies as

19 described above can also be applied to atoms and molecular structures, using available atomic

20 and molecular data. Generally, finding an atomic or molecular mass-related frequency is

21 accomplished by multiplying the mass in kilograms by a factor (speed of light squared / Plank's

22 constant). However, because atoms and molecules in many biological settings are not in a

23 vacuum or air medium, a different method for determining atomic or molecular mass-related

24 frequencies is used in the present invention to account for the actual surrounding biological

25 medium. In an embodiment of the present invention, a therapeutic resonant frequency related to

1   an atomic or molecular mass is determined by first calculating an atom's or molecule's deBroglie

2   wavelength, using the following formula:

3   wavelength = Plank's constant / (mass in kilograms x speed of light).   (4)

4   To determine an appropriate therapeutic resonant frequency, the velocity of

5   electromagnetic radiation through a specific medium is adjusted in relation to that medium, using

6   the following relationship:

7   velocity of electromagnetic radiation through a medium / wavelength =

8   therapeutic resonant frequency in the medium.   (5)

9   For example, using the atom uranium-238 with a kilogram mass of 3.952929 e-25 kg

10   (atomic mass 238.0507847), formula (4) above gives a deBroglie wavelength of 5.5913498 e-18

11   meters. To determine a therapeutic resonant frequency for uranium-238 in live tissue, formula

12   (5) above is used: (105,868,288.9 m/s) / 5.5913498 e-18 m = 1.893429887 e+25 Hz.

13   Using a factor of 2^{73} to determine a corresponding therapeutic resonant frequency in a

14   lower octave within the acoustic range according to the methods of the present invention, the

15   resulting therapeutic resonant frequency would be: 1.893429887 e+25 Hz / 2^{73} = 2004.7 Hz.

16   This is a frequency that currently available frequency-emitting devices are capable of generating.

17   Indeed, this therapeutic resonant frequency is in a range commonly used as cancer therapy

18   frequencies.

19   In embodiments of the present invention, methods for determining an appropriate

20   therapeutic resonant frequency for atoms and molecules, as described above, adjust for the

21   velocity of electromagnetic radiation through a specific medium in relation to that medium. As

22   an illustration, if uranium-238 was in a water medium at 40 degrees centigrade, adjustment is

23   made for the velocity of EM radiation through water at 40 degrees centigrade, which is

24

1   225,319,768 m/s. A therapeutic resonant frequency is then determined by dividing this velocity

2   by the uranium-238 de Broglie wavelength, using formula (5) above: (225,319,768 m/s) /

3   5.5913498 e-18 meters = 4.029792 e+25 Hz.

4   This frequency when translated by "octaves" to an audio range octave by dividing by 2^{74},

5   gives a frequency of 2133.3 Hz. This frequency is also very close to an important area of

6   commonly used cancer frequencies.

7   In another example, the molecule benzo[a]pyrene has a kg mass of 4.18612 e-25 kg

8   (atomic mass 252.0939). It is considered a major carcinogenic molecule in smoke from

9   cigarettes, coal, and other sources. Formula (1) gives a deBroglie wavelength of 5.279879 e-18

10   meters. Using formula (2), the resonant frequency of this molecule in living tissue would be:

11   (105,868,288.9 m/s) / 5.279879 e-18 meters = 2.005127297 e+25 Hz.

12   Using a factor of 2^{73} to determine a corresponding therapeutic resonant frequency in a

13   lower octave within the acoustic range according to the methods of the present invention, the

14   resulting therapeutic resonant frequency would be: 2.005127297 e+25 Hz / 2^{73} = 2123 Hz.

15   Again, this therapeutic resonant frequency is a range of previously available frequencies

16   commonly used in cancer therapy.

17   As with complete genomes and with genes and gene sections, therapeutic resonant

18   frequencies for atoms and molecules determined more readily and efficiently by methods of the

19   present invention than by other methods, such as by trial and error, reliably match frequencies

20   found by other methods.

21   While the present invention has been described with reference to several specific

22   embodiments, those skilled in the art will be able to make various modifications to the described

23   embodiments, for instance, by factoring therapeutic resonant frequencies to electromagnetic

1 ranges other than human-audible ranges and by adjusting for various media, without departing

2 from the spirit and scope of the invention. It is therefore to be understood that within the scope

3 of the appended claims the invention may be practiced other than as specifically described

4 herein.

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